Project Report

Team ID	**PNT2022TMID04798**
Project Name	**CONTAINMENT ZONE ALERTING APPLICATION**

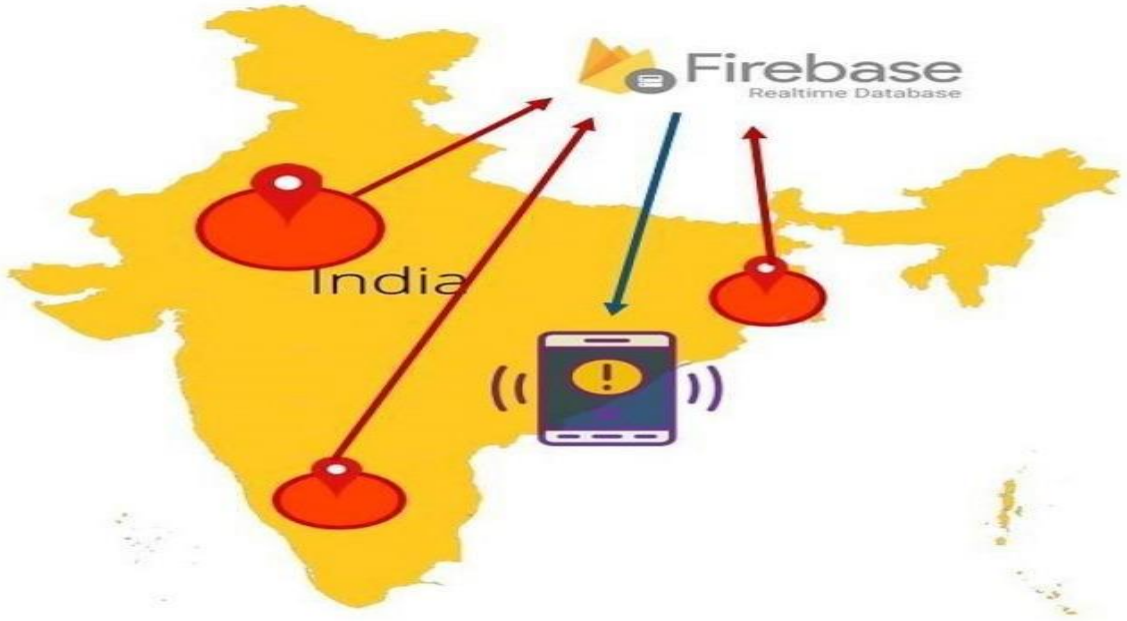
1. INTRODUCTION:

1.1 Project Overview:

Currently there are several research works undergoing in the country to prevent Covid-19 cases from rising. Previously our country was importing medical kits like PPE (Personal Protection Kits), mask from outside, but now it has been successful in developing these kits. Along with taking initiatives to fight this disease, our country has also taken steps to make people aware of the disease. The news and media have a great part in creating this awareness by informing the public about the preventive measures that can keep them away from infection. Awareness among the people to carry out all the preventive measures can immensely help to reduce spread of the virus. The country has created containment zones throughout the cities wherever Covid-19 cases have been reported to prevent further spread of the virus. These containment zones have been kept isolated from the outside public to ensure no contamination occurs outside. After more than 2 months of the lockdown, the government has relaxed some of the lockdown rules and has permitted reopening of government offices, bus and other road transportation facilities and shopping markets. People can move inside the city for work and other purposes. But the containment zones are still being kept isolated, and new containment zones are being formed wherever Covid-19 cases have been reported. These zones are highly contagious as droplets with virus coughed out from an unscreened asymptomatic patient can travel up to 8 m (Bahl et al. 2020). Though these containment zones are guarded by policemen, still there remains a chance that people might unknowingly step into them. In this situation where people can move in the city, these containment zones pose a risk of infection to these city dwellers. Therefore, informing people about the location of the containment zones can help them bypass and avoid these zones and thereby reduce the chance of community transmission. In this paper, we focus on developing a mobile based application to provide information regarding the Covid-19 containment zones in West Bengal. The application further tracks the user's location and provides notification alert if the user has entered a containment zone. The application also provides daily Covid-19 case statistics to the users to keep them updated. The application is developed on Android SDK and uses Firebase Cloud Firestore to store the location data. Android's geofencing client is used to create geofences around the containment zones and notification manager is used to provide notifications. The application also uses RESTful web services to show the Covid-19 cases in West Bengal. We have tested our application with different users in different locations across West Bengal and it works efficiently and is able to attain our target.

1.2 Purpose:

The Android application shows the location of the containment zones to the users. It also notifies the user when he or she trespasses the boundary of a containment zone or stays in the containmentzone.



2. LITERATURE SURVEY:

2.1 Existing problem:

People doesn't have proper knowledge about containment zones since they do change daily and hard to keep updated and if they are not updated properly, they will lead to wide spread of disease.

2.2 Reference:

PAPER 1:

TITLE: Tracking the Covid zones through geo-fencing technique

AUTHOR NAME: Anto Arockia Rosaline R ,Lalitha R ,Hariharan G ,Lokesh

PUBLICATION YEAR: 2017

DESCRIPTION:

Following the tracking of a suspicious person, the geo-fenced layer is mapped out in the vicinity, and the virtual perimeter is then employed for the subsequent trapping procedure. As soon as the Covid monitoring team updates this geo-fenced layer, the public can view it. The idea of creating a virtual perimeter region is known as geo-fencing. Effective containment zone monitoring is made possible by this virtual perimeter monitoring technology. By utilising an automated system based on wireless infrastructure, it lowers operational costs. Additionally, it promptly alerts the law enforcement to find the offenders. As a result, it facilitates the inspection of containment areas and the monitoring of those who disobey governmental regulations. Users can receive updates from the Covid team on the alert zone. The Covid team has a number of modules for suspect tracking, hotspot fencing, etc. The Covid team must seek a service from the service network provider in the case of suspect tracking, and following authorization, they will offer the coordinates. According to our telecommunication legislation, it is illegal to share data; nonetheless, exchanging personal information without the individual's knowledge via any means is occasionally allowed with governmental approval for investigative purposes.

PAPER 2:

AUTHOR NAME: Geofencing 2.0: Taking Location-based Notifications to the Next Level

PUBLICATION YEAR: 2016

DESCRIPTION:

Sandro Rodriguez Garzon Bersant Deva The basic Android application that served as the prototype Geofencing client was used. This client is primarily responsible for carrying out the geofencing server's ongoing location update strategy. This must be accomplished with little energy consumption because the Geofencing client is located on a mobile device. We made the decision to employ the low energy Geofencing features of the Android operating system to keep an eye on the safety zone. As a result, a safety zone is considered as a single circular geofence with a required exit on the mobile device. However, they discovered that there was occasionally a significant lag time between leaving the safety zone and receiving a notification from the system about the leave. In order to address this issue, a specific amount of the safety zone's radius is decreased. While the safety zone and how it is implemented have a significant impact on overall energy consumption, it is also important to make the right choice when it comes to a placement mechanism. In order to reduce power consumption without compromising the necessary position precision, they used a device-based smart combination of various positioning mechanisms introduced by. By temporarily deactivating placement when a device is not in motion, the Geofencing client also makes use of cutting-edge mobile sensing capabilities integrated into the Android operating system's activity recognition unit. Mobile users who live close to a geo-border fence's will find this to be of particular utility. If the Geofencing server notifies the Geofencing client about a geonotice, the notification will appear right away.

PAPER 3

TITLE: Development of An Android Application for Viewing Covid19 Containment Zones Alerting.

AUTHOR NAME: India Ranajoy Mallik, Amlan Protim Hazarika, Sudarshana Ghosh Dastidar, Dilip Sing & Rajib Bandyopadhyay

PUBLICATION YEAR: 2019

DESCRIPTION:

The World Health Organization has declared the outbreak of the novel coronavirus, Covid-19 as pandemic across the world. With its alarming surge of affected cases throughout the world, lockdown, and awareness (social distancing, use of masks etc.) among people are found to be the only means for restricting the community transmission. In a densely populated country like India, it is very difficult to prevent the community transmission even during lockdown without social awareness and precautionary measures taken by the people. Recently, several containment zones had been identified throughout the country and divided into red, orange and green zones, respectively. The red zones indicate the infection hotspots, orange zones denote some infection and green zones indicate an area with no infection. This paper mainly focuses on development of an Android application which can inform people of the Covid-19 containment zones and prevent trespassing into these zones. This Android application updates the locations of the areas in a Google map which are identified to be the containment zones. The application also notifies the users if they have entered a containment zone and uploads the user’s IMEI number to the online database. To achieve all these functionalities, many tools, and APIs from Google like Firebase and Geofencing API are used in this application. Therefore, this application can be used as a tool for creating further social awareness about the arising need of precautionary measures to be taken by the people of India.

PAPER 4:

TITLE: AarogyaSetu
AUTHOR NAME: National Informatics Centre, Ministry of Electronics & Information Technology, Government of India.

PUBLICATION YEAR: 2014

DESCRIPTION:

The most popular containment zone alert application among the options currently in use in India is called Aarogya Setu. The Indian government created a mobile application to link the public with crucial health services. Its primary features include geo-location-based COVID19 data, user risk status, automatic contact tracing using Bluetooth, and much more. The movement of an infected individual is tracked using Bluetooth and GPS technology, and the system notifies the public of the locations the infected person has visited while designating those locations as vulnerable ones. It employs cellular triangulation to determine a person's location in the absence of GPS technology. While Aarogya Setu can track down contacts and notify those who have come into touch with someone who has COVID-19, it also actively keeps track of quarantine or containment zones and alerts users who enter them. The Terms of Use and Privacy Policy must be accepted at the time of registration when installing the application on any Android or iOS mobile device, and ongoing use of the application denotes continued acceptance. Name, age, sex, occupation, phone number, overseas travel within the previous 28–45 days, and whether the user is a smoker are all pieces of information that the app gathers. This data is kept on a server that is under the jurisdiction of the Indian government. It is hashed and sent to the user's mobile application along with a special digital ID (DID). The user is recognised using the DID. In order for the user's mobile phone to exchange information with another device that has the app when it gets within range, the Bluetooth and GPS services must be turned on. Their individual IDs, along with the time and GPS location, are kept on the two phones when two users come into close proximity. The format in which this data is kept is encrypted. Only after a person tests positive is it posted to the government-controlled servers of the app.

2.3 Problem Statement Definition:

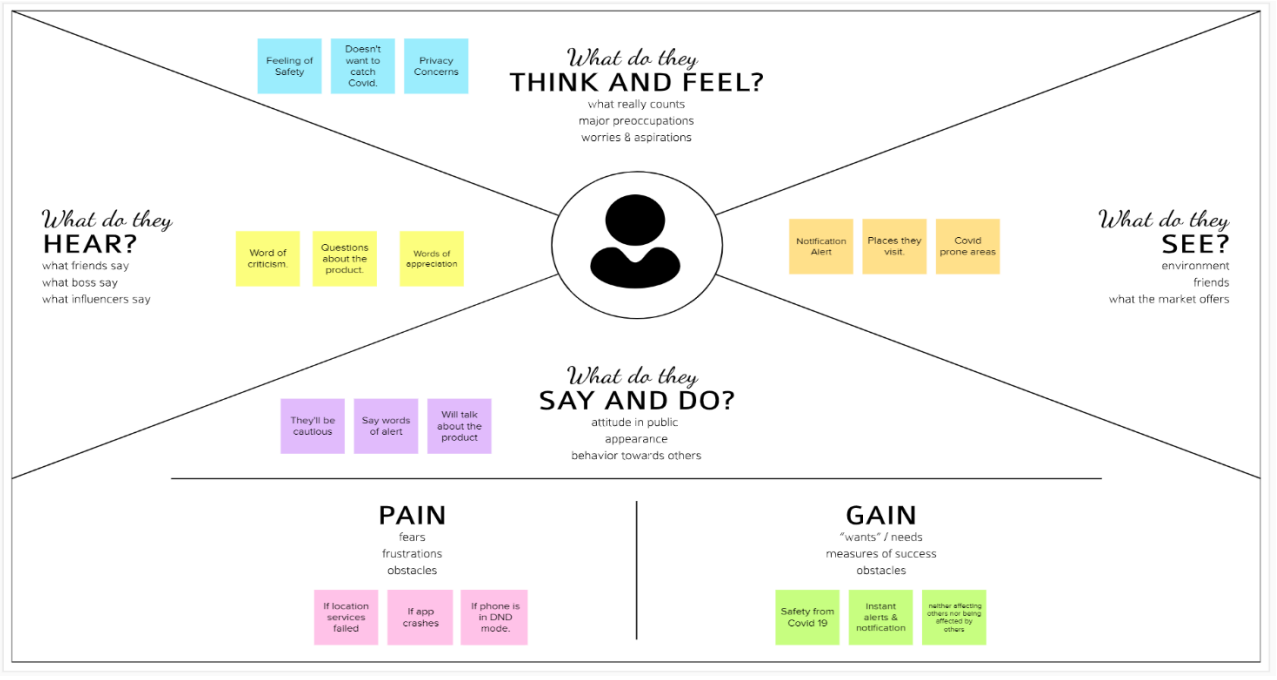
PROBLEM STATEMENT 1:

PROBLEM STATEMENT 2:

3. IDEATION AND PROPOSED SOLUTION:

3.1 Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures knowledge about a user's behaviours and attitudes. It is a useful tool to helps teams better understand their users. Creating an effective solution requires understanding the true problem and the person who is experiencing it. The exercise of creating the map helps participants consider things from the user's perspective along with his or her goals and challenges



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3.2 Ideation & Brainstorming:

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3.3 Problem Solution:

S.NO	PARAMETER	DESCRIPTION
1.	Problem Statement (Problem to be solved)	To solve people's science about the pandemic on the outside of their environment and giving people warning on possible danger.
2.	Idea / Solution description	Creating app that "Tracks live location of the User and alerts User when user trespasses into the contaminated zone or stays in the containment zone". Connecting hospitals to get "Medical data of patients". Using Blockchain technology for location and data encryption" to protect data getting into wrong hands.
3.	Novelty / Uniqueness	It connects people virtually thereby it provides alert messages and suggests remedies for the pandemic or virus spreading out there.
4.	Social Impact / Customer Satisfaction	Build people watch out! on pandemic out there. Propose people restorative on medicine for emergency assistance on viruses that spreading. Exposing case count and riskiness of viruses through daily broadcast.
5.	Business Model (Revenue Model)	Designing a test utensil that does basics test on finding out infected people on their own. Introducing premium plan that monitors user health by connecting app with their smart band. Giving services at home for a premium member
6.	Scalability of the Solution	In this model user provided with the medical services through online and giving nescience to people by giving restoratives on medicines and monitoring user movements on pandemic zones and alert before they affected.

3.4 Problem Solution fit:

4. REQUIREMENT ANALYSIS:

4.1Functional Requirement:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	**User Registration**	Registration through Gmail. Registration through mobilenumber.
FR-2	**User Confirmation**	Confirmation via Email.Confirmation via OTP.
FR-3	**Authentication**	It checking the confirmation ofthe password.
FR-4	**Business rule**	For subscriber's we give first 3 day's free trail. For un subscriber's the user needs to watch some advertisement for knowing the zone alert for first 3 day's.

4.2 Non-Functional requirements:

Following are the non-functional requirements of the proposed solution.

NR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	Providing recommendation link by using customer preference .
NFR-2	**Security**	The software team will issue some strong securitycc for the user's.
NFR-3	**Reliability**	The database update process must rollback all related updates when any update fails.
NFR-4	**Performance**	The loading speed of the server is quick and fast.

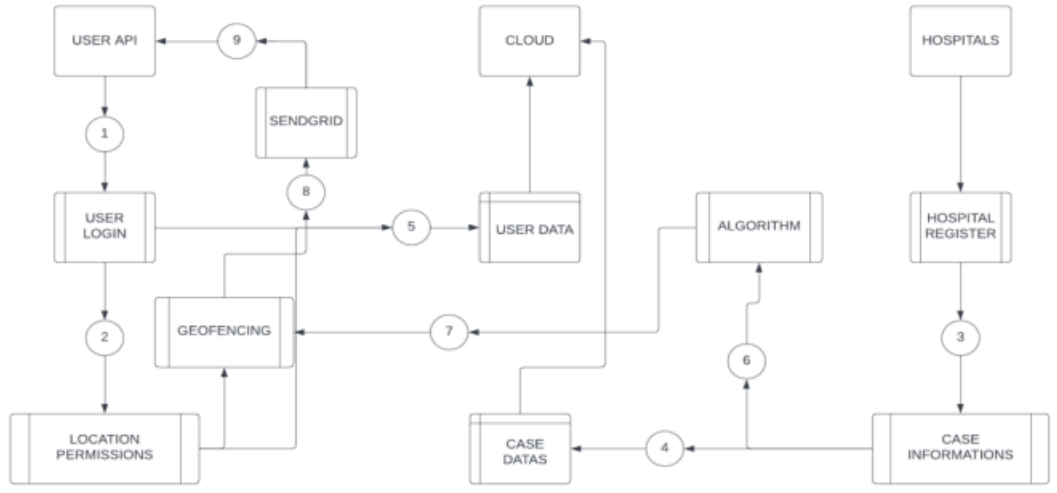
5. PROJECT DESIGN:

Data Flow Diagrams

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within asystem. A neat and clear DFD can depict the right amount of the system requirement graphically.

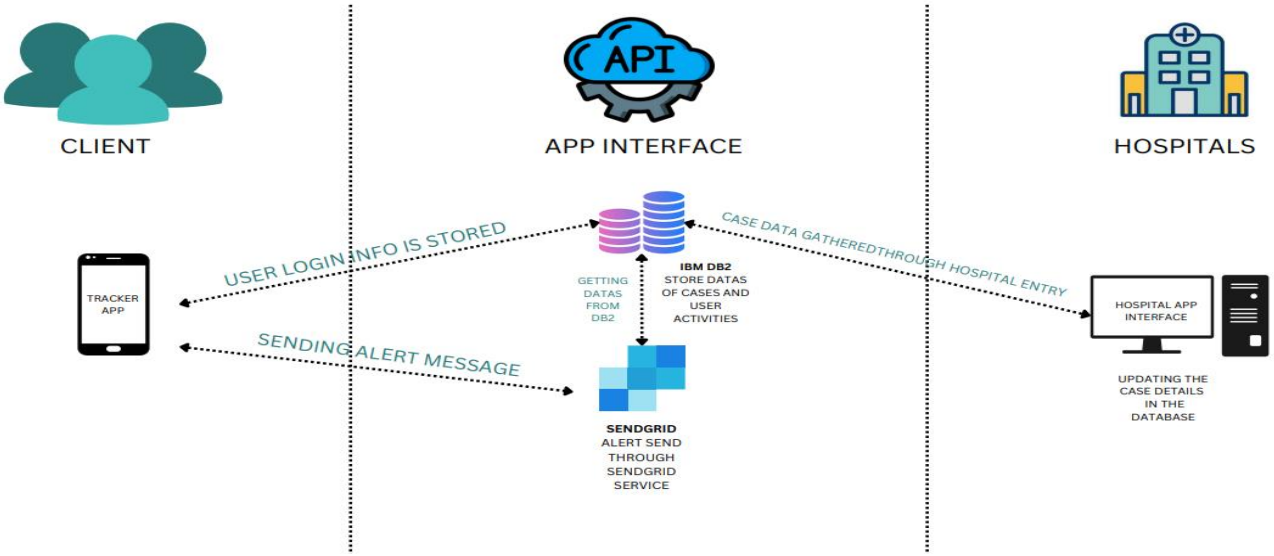
It shows how data enters and leaves the system, what changes the information, and where data is stored.

5.1 Data flow diagram:

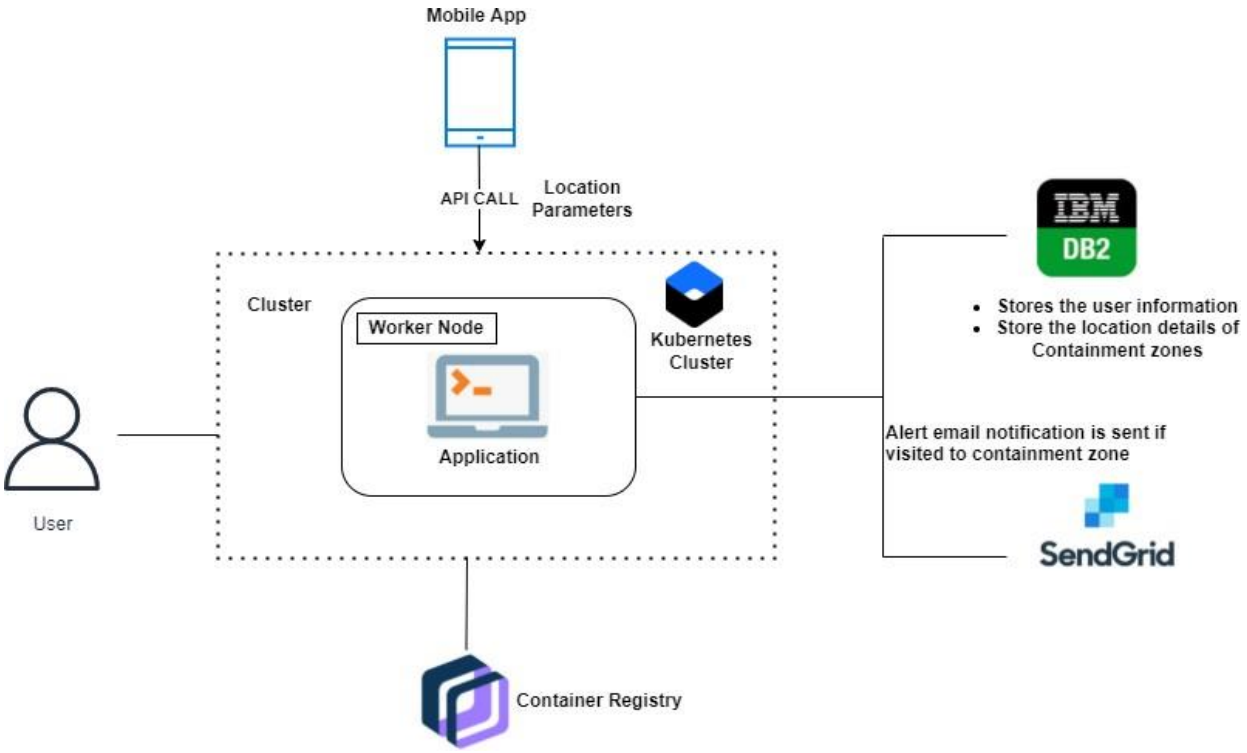


1. USER REGISTRATION IS DONE BY FILLING FORMS
2. AFTER REGISTRATION GETTING LOCATION PERMISSIONS
3. CASE INFORMATIONS GATHERED THROUGH HOSPITAL REGISTER
4. GATHERED CASE DATA IS STORED IN CLOUD
5. USER LOGIN INFO IS STORED IN CLOUD
6. BY USING GATHERED CASE INFORMATION IS CREATED
7. THE GENERATED ALGORITHM IS DISPLAYED IN GEOFENCING SYSTEM
8. GENERATED DATA IS LINKED WITHN SENDGRID SERVICES
9. SENDGRID COLLAB WITH GEOFENCE ALGORITHM WHEN USER ENTERS CONTAMINATED ZONE ALERTS IS SEND THROUGH NOTIFICATION

5.2 SOLUTION ARCHITECURE:



5.2TECHNICAL ARCHITECTURE:



5.3 User Stories:

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Login	Registration (web and android)	USN-1	I can register for theapplication by entering my email and password	I can control my online account and dashboard.	Medium	Sprint-1
Sign Up	Registration (web and android)	USN-2	I will receive a confirmation email once I have registered for the application	I can handle the waste collection.	High	Sprint-1
Services	Dashboard	USN-3	need to give permissionto access my location	I can take the shortest path to reach the waste filled route specified.	Medium	Sprint-2
Services	Service	USN-4	I need to differentiate the containment zones	I can collect the trach, pull it to the truck, and send it out.	Medium	Sprint-3
Data collection	Service	USN-5	. I need to alert the user when they enter the containment zone through the notification	All of these processes are under my control.	High	Sprint-4

6. PROJECT PLANNING & SCHEDULING:

TITLE	DESCRIPTION	DATE
Literature Survey & Information Gathering	Literature survey on the selected project & gathering information by referring the, technical papers ,researchpublications etc.	19 OCTOBER 2022
Prepare Empathy Map	Prepare Empathy Map Canvas to capture the user Pains & Gains,Prepare list of problem statements	18 OCTOBER 2022

Ideation	List the by organizing the brainstorming sessionand prioritize the top 3 ideas based on thefeasibility & importance.	18 OCTOBER 2022

6.1 Sprint Delivery & Estimation:

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
1	**Registration**	USN-1	**USER:** I can register for the application by entering my email and password	3	High	Ashok Aswin BhupeshKumar Daranya
		USN-2	**USER:** I will receive a confirmation email once I haveregistered for the application	2	High	Ashok Aswin BhupeshKumar Daranya
	Login	USN-3	**USER:** I can log into the application by entering myemail & password	3	High	Ashok Aswin BhupeshKumar Daranya

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
2	**Dashboard**	USN-4	**USER:** I need to give permission to access my location	5	High	Ashok Aswin BhupeshKumar Daranya
		USN-5	**USER:** I can view the map with the containmentzones	5	High	Ashok Aswin BhupeshKumar Daranya
	Service	USN-6	**ADMIN:** I need to update the containment zones.	5	High	Ashok Aswin BhupeshKumar Daranya

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
3	**Service**	USN-7	**ADMIN:** I need to differentiate the containment zonesbased on the intensity of infection.	3	Medium	Ashok Aswin BhupeshKumar Daranya
		USN-8	**ADMIN:** I need to provide precautionary measureswhen they travel.	3	Medium	Ashok Aswin BhupeshKumar Daranya
		USN-9	**ADMIN:** I need to provide information about the nearby hospitals	3	Low	Ashok Aswin BhupeshKumar Daranya

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
4	**Service**	USN-10	**ADMIN:** I need to alert the user when they enter thecontainment zone through email or SMS	5	High	Ashok Aswin BhupeshKumar Daranya
		USN-11	**ADMIN:** I need to provide medical recommendations by collaborating with hospitals.	3	Low	Ashok Aswin BhupeshKumar Daranya
	Data collection	USN-12	**ADMIN:** I need to store user details on the cloud	5	High	Ashok Aswin BhupeshKumar Daranya
		USN-13	**ADMIN:** I need to collect details about covid-19 cases from verified sources	5	High	Ashok Aswin BhupeshKumar Daranya

6.2. Sprint Delivery Schedule:

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)

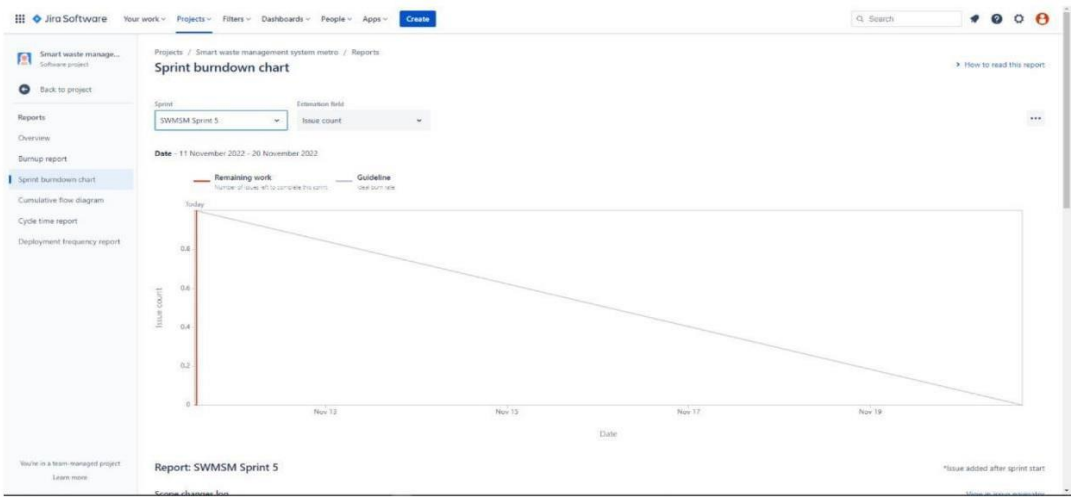
Sprint-1	20	6 Days	24 Oct 2022	29 Oct 2022	20	29 Oct 2022
Sprint-2	20	6 Days	31 Oct 2022	05 Nov 2022	20	05 Nov 2022
Sprint-3	20	6 Days	07 Nov 2022	12 Nov 2022	20	12 Nov 2022
Sprint-4	20	6 Days	14 Nov 2022	19 Nov 2022	20	19 Nov 2022

Velocity:
Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{sprint\ duration}{velocity} = \frac{20}{10} = 2$$

6.3 Reports from JIRA:

BURNDOWN CHART



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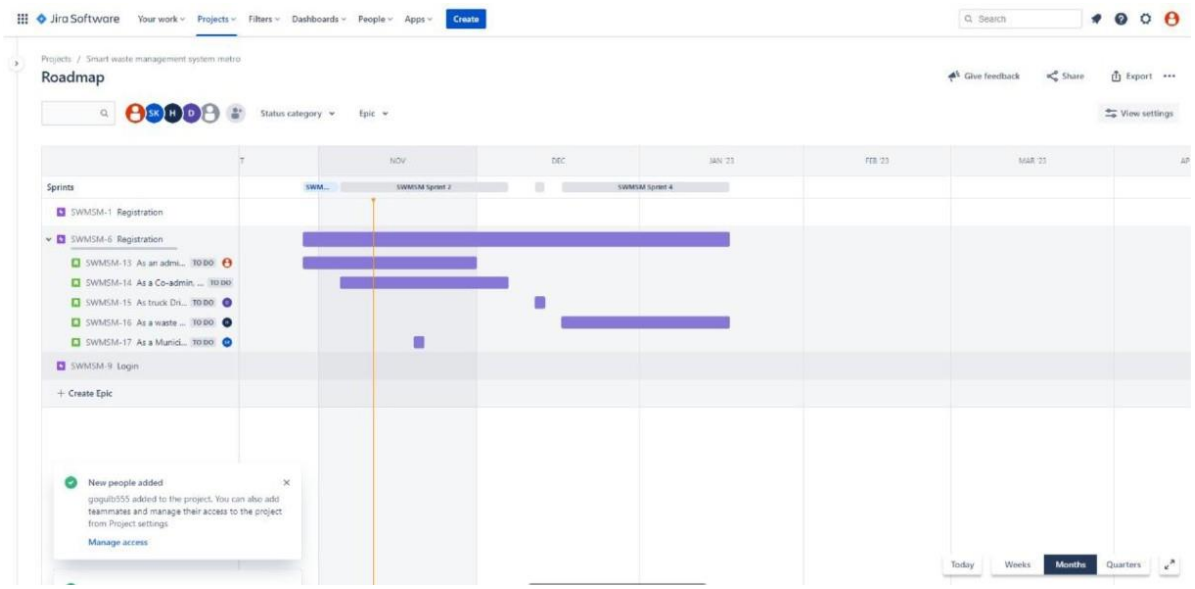
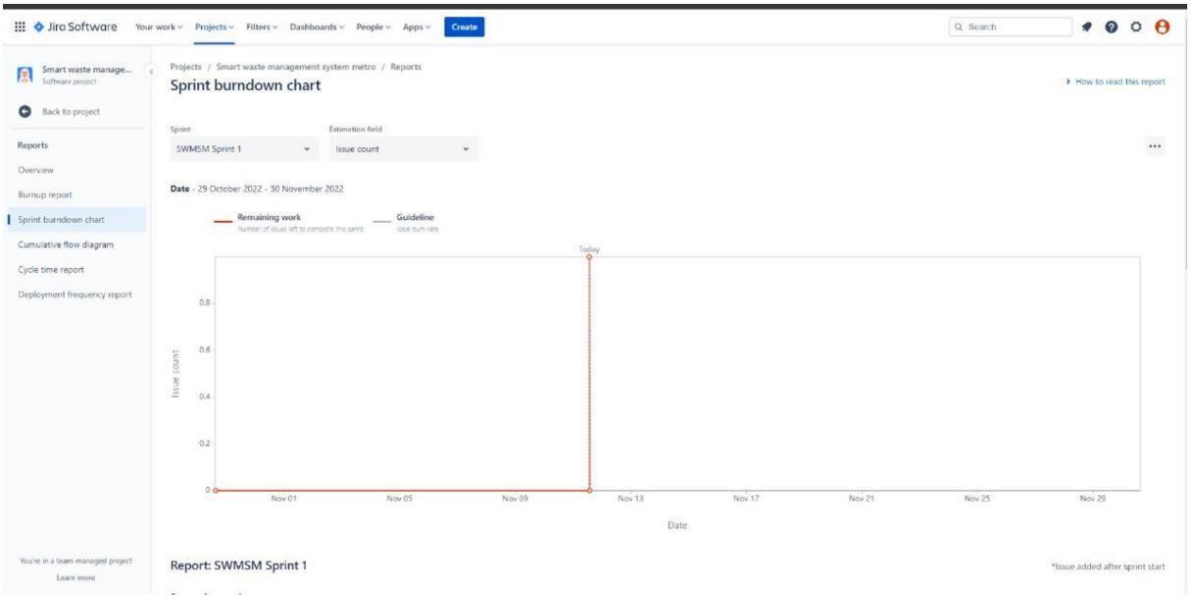
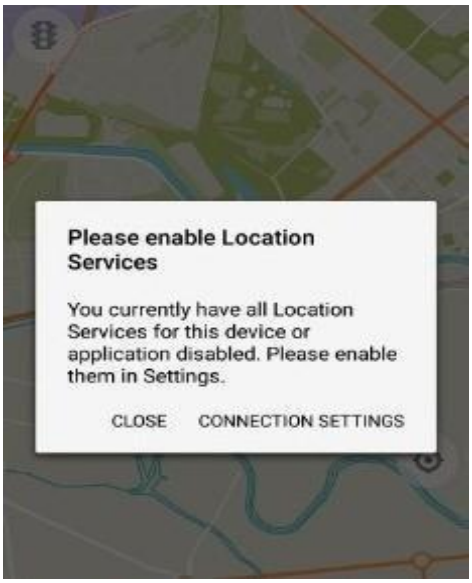
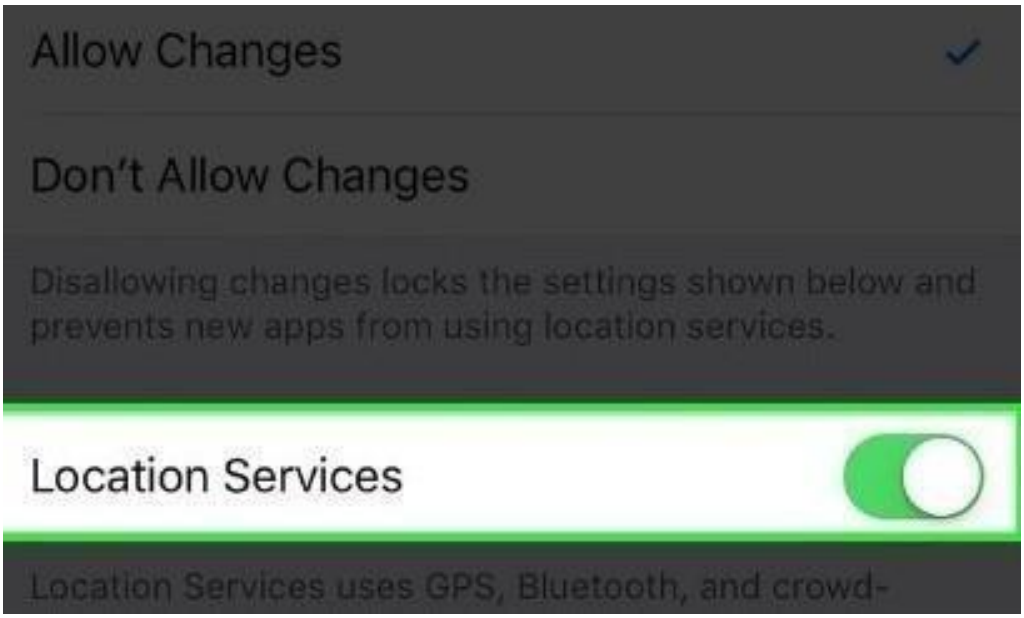


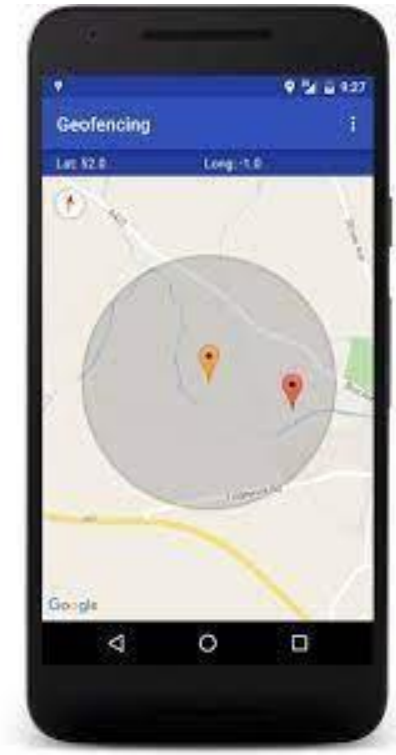


7. CODING & SOLUTIONING (Explain the features added in the project along with code)



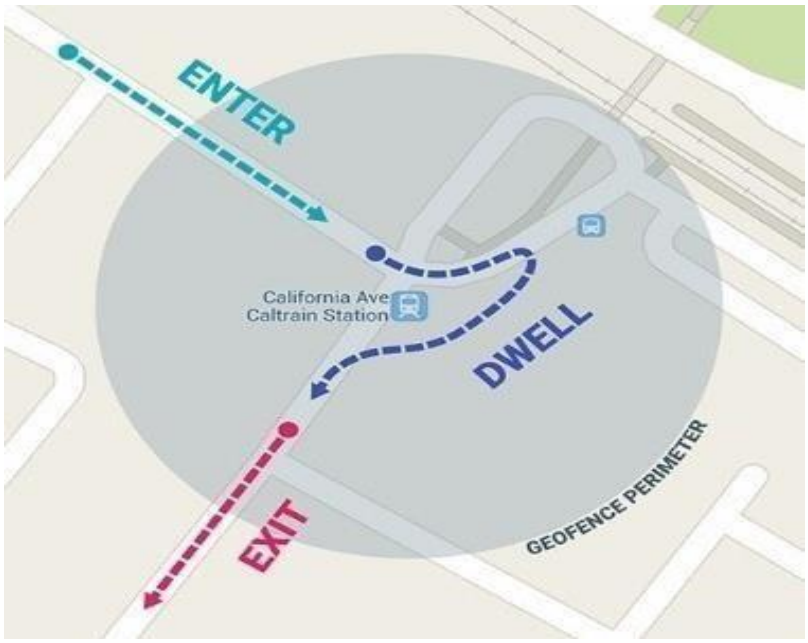


GEOFENCE IN ANDROID APP :



Geofencing
Lat: 52.0
Long: -1.0

Remind me there
Park
Teatro Colseo
Shopping Mall
Buenos Aires
Choose the radius
600 meters
CONTINUE

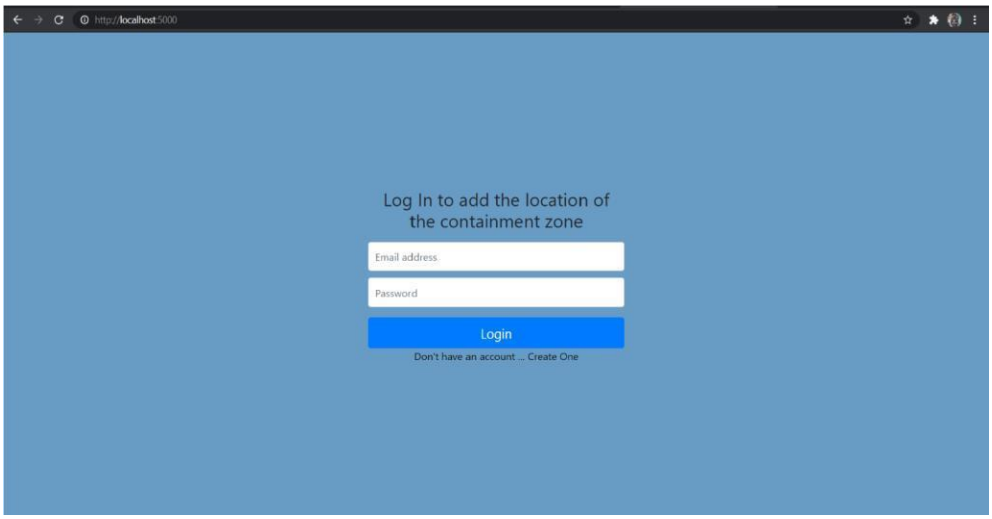


8. RESULTS:

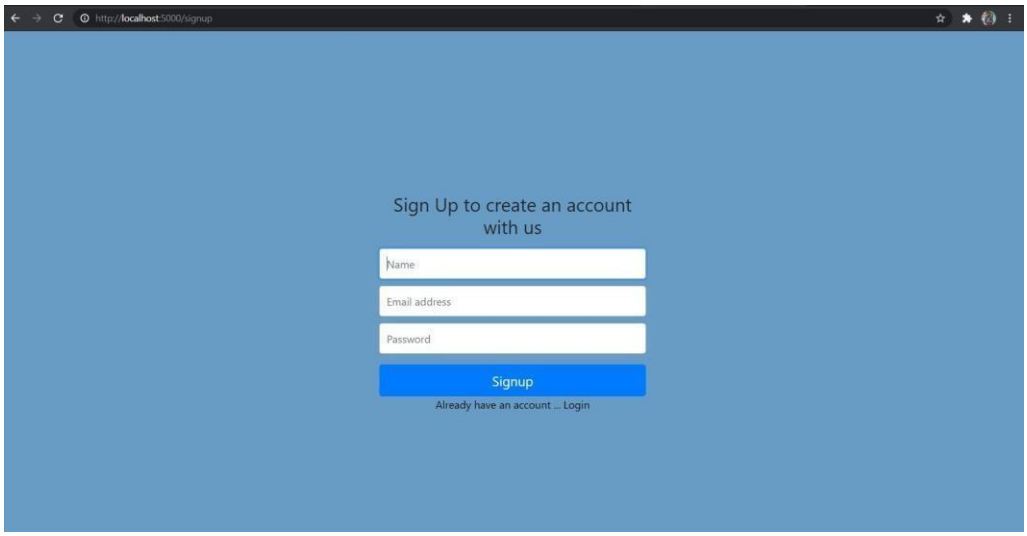
UI Interact with Application:

Admin App:

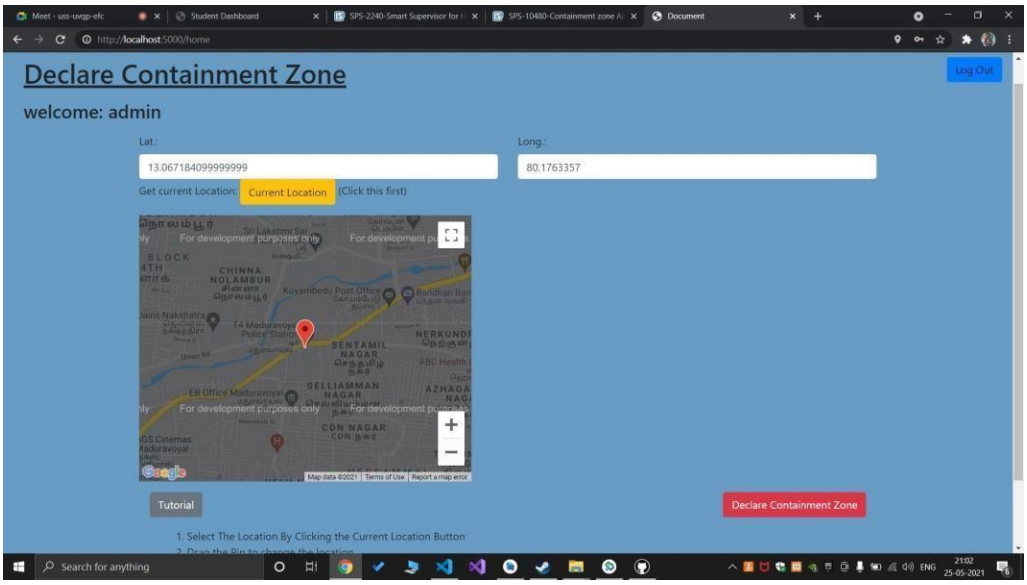
Login Page:



Register page:

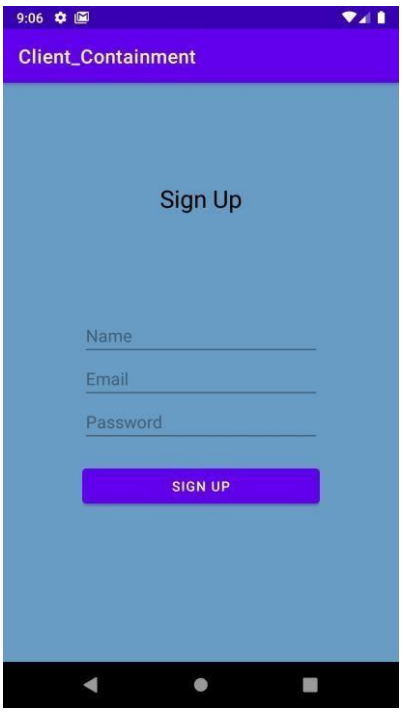


Home page:

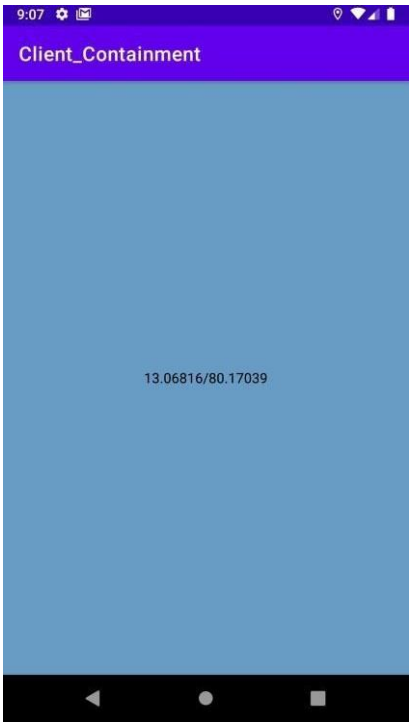


Location data page:

Client Application:
Register screen:



Current Location:



An Email will be sent to the registered mail id if the location is within 100 meters of the locations present in the admin app.

9. ADVANTAGES & DISADVANTAGES:

ADVANTAGES:

- People can be alerted before entering containment zone.
- Further spread of virus can be reduced considerably.

DISADVANTAGES:

- Accuracy of application depends on the number of data given to the application.

- Application's accuracy is directly proportional to the number of data given to the application
- about the infected patients.

10. CONCLUSION:

This application is intended to provide information about containment zones in a particular

region by alerting people, through continuous monitoring of an individuals location. Key benefits of

the application are monitoring peoples activity and alerting them to their safety movements.

11. FUTURE SCOPE:

Although we tried to cover almost all of the aspects during our developmental phase, however we were forced to leave some aspects because of lack of time as well as monetary and other reasons. Just like in the field of software development where there are always someshortcomings and room for improvement our application can be enhanced further:-

1) The application can include various government organization to help act faster.

2) The dataset obtained from the application can be used for predictive analysis to determineprone areas and include special method for tackling the problem in those areas.

3) Emergency signal in case of network failure and internet connection loss.

4) Tackling victim's movements.

5) Improved Google positioning system's precision.

6) The client part of application can be integrated in a single intelligent device.

For analysis purpose, we could use machine learning (ML) algorithms as well as data mining applications. There is a sub branch of machine learning known as time series analysis (TSA), which could be used to predict and analyze the data obtained through this application. Time series analysis is used to predict crop production as well as sales in different quarter.

12. APPENDIX:

Source Code:

```
# Project : CONI'AINMENT ZONE ALERI'ING APPLICATION Team ID :
# PNT2022TMID04798
```

APP.PY:

```
from logging import
errorfrom flask import *
from jinja2.utils import select_autoescape
import bcrypt
from flask_mysqldb import MySQL
```

```
import json
from sendgrid import SendGridAPIClient
from sendgrid.helpers.mail import Mail


#    initialization
app = Flask(__name__)

#    config
app.secret_key = "\x19Ts\xbe\xe7\x8c_\r\x12Q\x14\x13>q\xb7'WTH0\x9f\xe4\xec\xb1"
app.config['MYSQL_HOST'] = 'localhost'
app.config['MYSQL_USER'] = 'root'
app.config['MYSQL_PASSWORD'] = ''
app.config['MYSQL_DB'] = 'zone2'

mysql = MySQL(app)

#    functions


def send_mail(email):
    print(email)
    message = Mail(from_email='aswinnkl710@gmail.com',
                   to_emails=email,
                   subject='caution', plain_text_content='Please
                   Stay  Safe',
                   html_content='<h2>You are entering into a containment Zone</h2>')

    try:
        sg = SendGridAPIClient(
            'SG.7BJDtQDlS8unH0r5_TufVQ.Ykpcz19QcqgcNwYZC3a0mNRPhGksG117YURqOTa2HL')
        response = sg.send(message)
        print(response.status.code)
        print(response.body)
        print(response.headers)
    except Exception as e:
        print(e)


def create_bcrypt_hash(password):
#    convert the string to bytes
    password_bytes = password.encode()
#    generate a salt
    salt = bcrypt.gensalt(14)
#    calculate a hash as bytes
    password_hash_bytes = bcrypt.hashpw(password_bytes, salt)
#    decode bytes to a string
    password_hash_str = password_hash_bytes.decode()
    return password_hash_str
```

```
def verify_password(password, hash_from_database):
    password_bytes = password.encode()
    hash_bytes = hash_from_database.encode()

#     this will automatically retrieve the salt from the hash,
#     then combine it with the password (parameter 1)
#     and then hash that, and compare it to the user's hash
    does_match = bcrypt.checkpw(password_bytes, hash_bytes)

    return does_match

#    Api's


@app.route("/", methods=["GET",
"POST"]) def login():
    if(request.method == "POST"):

#       get the data from the form
        password = request.form['password']
        email = request.form['email']

#       initialize the cursor
        signup_cursor = mysql.connection.cursor()

#       check whether user already exists
        user_result = signup_cursor.execute(
            "SELECT * FROM USERS WHERE user_email=%s", [email]
        )

        if(user_result > 0):
            data =  signup_cursor.fetchone()
            data_password = data[3]
            if(verify_password(password,
            data_password)):
                signup_cursor.close()
                session['id'] = data[0]
                session['name'] = data[1]
                session['email'] =  data[2]
                return redirect(url_for("home"))
            else:
                return render_template('login.html', error=1)
        else:
            return render_template('login.html', error=2)
    return render_template('login.html', error=3)


@app.route("/signup", methods=["POST", "GET"])
```

```
def signup():
    if(request.method == "POST"):

    #     get the data from the form
        name = request.form['name']
        email = request.form['email']
        password = request.form['password']

    #     hash the password
        pw_hash = create_bcrypt_hash(password)

    #     initialize the cursor
        signup_cursor = mysql.connection.cursor()

    #     check whether user already exists
        user_result = signup_cursor.execute(
            "SELECT * FROM USERS WHERE user_email=%s", [email]
        )
        if(user_result > 0):
            signup_cursor.close()
            return render_template('signup.html',
        error=True)else:
        #     execute the query
            signup_cursor.execute(
                            'INSERT   INTO   USERS(user_name,user_email,user_password,user_type)
VALUES(%s,%s,%s,%s)', (
                    name, email, str(pw_hash), "2"
                )
            )

            mysql.connection.commit()
            signup_cursor.close()
            return redirect(url_for('login'))

    return render_template('signup.html', error=False)


@app.route("/home", methods=["POST", "GET"])
def home():
    if(session['id'] == None):
        return redirect(url_for('login'))

    if(request.method == "POST"):
    #     get data
        lat = request.form["lat"]
        lon = request.form["lon"]
        vis = 0
        if(lat == "" or lon == ""):
```

```
                return render_template('home.html', name=session['name'], email=session['email'],
id=session['id'], success=0)

    #    create a location cursor
        location_cursor = mysql.connection.cursor()

    #    Execute the query
        location_cursor.execute(
            'INSERT INTO LOCATION(location_lat,location_long,location_visited)
                VALUES(%s,%s,%s)', ( lat, lon, vis
            )
        )
        mysql.connection.commit()
        location_cursor.close()
                return render_template('home.html', name=session['name'], email=session['email'],
id=session['id'], success=True)
            return    render_template('home.html',    name=session['name'],    email=session['email'],
id=session['id'])


@app.route("/logout")
def logout():
#    remove the username from the session if it is there
    session['id'] = None
    session['name'] = None
    session['email'] =  None
    return redirect(url_for('login'))


@app.route("/data")
def data():
    if(session['id'] == None):
        return  redirect(url_for('login'))

    location_cursor = mysql.connection.cursor()

#    check whether user already exists
    user_result = location_cursor.execute(
        "SELECT * FROM LOCATION"
    )
    if(user_result == 0):
        return render_template("data.html", responses=0)
    else:
        res = location_cursor.fetchall()
        print(res)
        return render_template("data.html", responses=res)


@app.route("/android_sign_up", methods=["POST"])
```

```
def upload():
    if(request.method == "POST"):

        # get the data from the form
        name = request.json['name']
        email = request.json['email']
        password = request.json['password']

        # hash the password
        pw_hash = create_bcrypt_hash(password)

        # initialize the cursor
        signup_cursor = mysql.connection.cursor()

        # check whether user already exists
        user_result = signup_cursor.execute(
            "SELECT * FROM USERS WHERE user_email=%s", [email]
        )
        if(user_result > 0):
            signup_cursor.close()
            return {'status': 'failure'}
        else:
            # execute the query
            signup_cursor.execute(
                            'INSERT INTO USERS(user_name,user_email,user_password,user_type)
VALUES(%s,%s,%s,%s)', (
                    name, email, str(pw_hash), "1"
                )
            )

            mysql.connection.commit()
            id_result = signup_cursor.execute(
                'SELECT user_id FROM USERS WHERE user_email = %s', [email]
            )
            if(id_result > 0):
                id = signup_cursor.fetchone()
                return {"id": id[0]}
            signup_cursor.close()

    return {"status": "failure"}


@app.route("/get_all_users")
def getusers():
    signup_cursor = mysql.connection.cursor()

    # check whether user already exists
    user_result = signup_cursor.execute(
        "SELECT * FROM USERS"
```

```
    )
    if(user_result > 0):
        rv = signup_cursor.fetchall()
        row_headers = [x[0] for x in signup_cursor.description]
        json_data = []
        for result in rv:
            json_data.append(dict(zip(row_headers, result)))
        return json.dumps(json_data)


@app.route("/post_user_location_data", methods=["POST"])
def post_user_location():
    if(request.method == "POST"):

     #   get the data from the
        formlat = request.json['lat']
        lon = request.json['long']
        id = request.json['id']
        ts = request.json['timestamp']

     #   initialize the cursor
        user_location_cursor = mysql.connection.cursor()

     #   execute the query
        user_location_cursor.execute(
                    'INSERT    INTO USER_LOCATION(location_lat,location_long,user_id,timestamp)
VALUES(%s,%s,%s,%s)', (
                lat, lon, id, ts
            )
        )

        mysql.connection.commit()

        return {"response": "success"}


@app.route("/location_data")
def location_data():
    location_cursor = mysql.connection.cursor()

  #   check whether user already exists
    user_result = location_cursor.execute(
        "SELECT * FROM LOCATION"
    )
    if(user_result != 0):
        res = location_cursor.fetchall()
        print(res)
        row_headers = [x[0] for x in location_cursor.description]
        json_data = []
```

```
        for result in res:
            json_data.append(dict(zip(row_headers, result)))
        return json.dumps(json_data)
    else:
        return {"response": "failure"}


@app.route("/send_trigger", methods=["POST"])
def send_trigger():
                if(request.method ==
    # "POST"): get the data from
                    the form email =
                request.json['email']
    location_id = request.json['id']
    location_cursor = mysql.connection.cursor()
    #
        check whether user already exists
    user_result = location_cursor.execute(
        "SELECT location_visited FROM LOCATION WHERE location_id=%s", [
            location_id]
    )
    if(user_result == 0):
        return {"response": "failure"}
    else:
        res = location_cursor.fetchone()
        print(res[0])
        visited = res[0]
        visited = visited+1
        location_cursor.execute(
            "UPDATE LOCATION SET location_visited = %s WHERE location_id=%s",
            (visited, location_id)
        )
        mysql.connection.commit()
        send_mail(email)
    return {"response": "success"}

if __name__== "_main_":
#   app.run(host='0.0.0.0', port=5000)
```

DATA.HTML:

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
```

```
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Zones</title>
   <link      rel="stylesheet"
              href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css"
                                                                                integrity="sha384-
Vkoo8x4CGsO3+Hhxv8T/Q5PaXtkKtu6ug5TOeNV6gBiFeWPGFN9MuhOf23Q9Ifjh"
crossorigin="anonymous" />
    <style>
        body {
            padding-top: 30px;
            padding-bottom: 30px;
            background-color: #699cc5;
        }

        a {
            color: black;
        }
    </style>
</head>

<body>
    <div class="m-4 container">
        <h1><u>Location data and Visited People</u></h1>
    </div>
    <div class="m-4 container">
        <table class="table">
            <thead>
                <tr>
                    <th scope="col">S.No</th>
                    <th scope="col">Latitude</th>
                    <th scope="col">Longitude</th>
                    <th scope="col">No_Visited</th>
                </tr>
            </thead>
            <tbody>

                {%- for row in responses %}
                <tr>
                    <th scope="row">{{loop.index}}</th>
                    <td>{{row[1]}}</td>
                    <td>{{row[2]}}</td>
                    <td>{{row[3]}}</td>
                </tr>
                {%- endfor %}
            </tbody>
        </table>
    </div>
    <div class="m-3 float-right">
```

```
        <button type="button" class="btn btn-danger"><a href={{url_for("home")}}>Go to location
update Page</a></button>
    </div>

</body>

</html>
```

HOME.HTML

```
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
                                                    <link                                    rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css"
                                                                                integrity="sha384-
Vkoo8x4CGsO3+Hhxv8T/Q5PaXtkKtu6ug5TOeNV6gBiFeWPGFN9MuhOf23Q9Ifjh"
crossorigin="anonymous" />
    <style>
        body {
            padding-top: 30px;
            padding-bottom: 30px;
            background-color:  #6699cc5;
        }

        a {
            color: black;
        }
    </style>
</head>

<body>
    {% if success == True %}
    <script>
        alert("Location Uploaded Successfully");
    </script>
    {% elif success == 0 %}
    <script>
        alert("Enter Proper Location data");
    </script>
    {% endif %}
    <div class="m-3 float-right">
```

```
            <button type="button" class="btn btn-primary"><a href={{url_for("logout")}}>Log
Out</a></button>
    </div>
    <div class="container m-3">
        <h1><u>Declare Containment Zone</u></h1>
    </div>
    <div class="container m-3">
        <h3>welcome: {{name}}</h3>
    </div>
    <form method="POST" action="/home">
        <div class="container">
            <div class="form-group row">
                <div class="col-sm-6">
                    <label  class="control-label">Lat.:</label>
                    <input type="text" class="form-control" id="lat" name="lat" />
                </div>
                <div class="col-sm-6">
                    <label>Long.:</label>
                    <input type="text" class="form-control" id="lon" name="lon" />
                </div>
                <div class="col-sm-6">
                    <label>Get current Location:</label>
                        <button type="button" class="btn btn-warning" onclick="getLocation()">Current
Location</button>
                    <label>(Click this first)</label>
                </div>
            </div>

            <!-- map -->
            <div id="map_disp" style="height: 400px;width: 500px;"></div>
            <div class="m-3 float-right">
                <button type="submit" class="btn btn-danger">Declare Containment Zone</button>
            </div>
            <div class="m-3">
                                <button onclick="toggleTips()" type="button" class="btn btn-
secondary">Tutorial</button>
                <div id="tips" class="m-3">
                    <ol>
                        <li>Select The Location By Clicking the Current Location Button</li>
                        <li>Drag the Pin to change the location</li>
                        <li>Click on Declare Containment Zone to save the location to the database </li>
                    </ol>
                </div>
            </div>
            <div class="m-3 float-right">
                <button type="button" class="btn btn-warning"><a href="{{url_for('data')}}">Click Here TO
View The Containment Zones and Number of
```

```
                people visited</a></button>
        </div>
      </div>

      <script src="https://cdn.jsdelivr.net/npm/bootstrap@4.6.0/dist/js/bootstrap.min.js"
                                                                    integrity="sha384-
+YQ4JLhjyBLPDQt//I+STsc9iw4uQqACwlvpslubQzn4u2UU2UFM80nGisd026JF"
        crossorigin="anonymous"></script>
      <script src="https://code.jquery.com/jquery-2.2.4.min.js"></script>
                                                                    <script
src="https://maps.google.com/maps/api/js?sensor=false&amp;libraries=places"></script>
      <script
                                          src="https://rawgit.com/Logicify/jquery-locationpicker-
plugin/master/dist/locationpicker.jquery.js"></script>

      <script>
        function getLocation() {
          if (navigator.geolocation) {
            navigator.geolocation.getCurrentPosition(showPosition);
          } else {
            alert("No location");
          }
        }
        function showPosition(position) {
          $(' map_disp').locationpicker({
            location: {
              latitude: position.coords.latitude,
              longitude: position.coords.longitude
            },
            radius: 0,
            inputBinding: {
              latitudeInput: $(' lat'),
              longitudeInput: $(' lon'),
            },
            enableAutocomplete: true,
            onchanged: function (currentLocation, radius, isMarkerDropped) {
              // Uncomment line below to show alert on each Location Changed event
                  // alert("Location changed. New location (" + currentLocation.latitude + ", " +
currentLocation.longitude + ")");
            }
          });
        }
        function toggleTips() {
          var x = document.getElementById("tips");
          if (x.style.display === "none") {
            x.style.display = "block";
          } else {
            x.style.display = "none";
```

```
        }
      }
    </script>
</body>

</html>
```

GitHub Link:

https://github.com/IBM-EPBL/IBM-Project-29443-1660125587

Video Demo Link:

https://drive.google.com/uc?i

d=1HLXRpimSo2LmGkstJ70y

wQMknZR39LZD&export=do

wnload